ACADEMIA BRIDGE
(Pomeroy Bridge)
Spanning Tuscarora Creek, bypassed section of Mill Hill Road (TR 334)
Academia
Juniata County
Pennsylvania

HAER PA-624
PA-624

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
U.S. Department of the Interior
1849 C Street NW
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ACADEMIA BRIDGE
(Pomeroy Bridge)

HAER No. PA-624

LOCATION:	Spanning Tuscarora Creek, bypassed section of Mill Hill Road (TR 334), Academia, Juniata Creek, Pennsylvania UTM: 18.290457.4485492, Spruce Hill, Pennsylvania, Quad
STRUCTURAL TYPE:	Wood covered bridge; Burr truss
DATE OF CONSTRUCTION:	1902
DESIGNER:	G.F. Goodman
BUILDER:	James N. Groninger
PRESENT OWNER:	Juniata County Historical Society
PREVIOUS USE:	Vehicular bridge
PRESENT USE:	Bypassed; tourist attraction
SIGNIFICANCE:	The Academia Bridge is the longest covered bridge in Pennsylvania and an excellent example of a Burr truss, a system developed by Theodore Burr in the early nineteenth century.
HISTORIAN:	Researched and written by Lola Bennett, November 2003
PROJECT INFORMATION:	The National Covered Bridges Recording Project is part of the Historic American Engineering Record (HAER), a long-range program to document historically significant engineering and industrial works in the United States. HAER is administered by the Historic American Engineering Record, a division of the National Park Service, U.S. Department of the Interior. The Federal Highway Administration funded the project.

Chronology

1770 Thomas Beale establishes a grist mill at this site

1771 Theodore Burr born

1805 America's first covered bridge built at Philadelphia

1806 Theodore Burr patents the Burr truss

1817 Theodore Burr receives a second patent for the Burr truss

1822 Theodore Burr dies

1852 James Groninger born

1863 Crossing appears near Pomeroy's Mill on G.M. Hopkins's "Map of Juniata County"

1901 Residents petition for new bridge at Pomeroy's dam

1902 Academia Bridge constructed

1931 James Groninger dies

1950 Academia Bridge bypassed and closed to traffic

1960 Juniata County Historical Society obtains ownership of Academia Bridge

1961 Academia Bridge rehabilitated

2003 Academia Bridge recorded by the Historic American Engineering Record

Description

The Academia Bridge is a two-span covered timber Burr arch truss bridge on a stone pier and abutments. The total length of the bridge is 271'-6", with two clear spans of approximately 124'. The truss is 14'-6" high from the top of the upper chord to the bottom of the lower chord and 18'-6" wide overall, with a roadway width of 15'-6". The housing is continuous over the pier, a distance of about 9'-6", and there are shelter panels at each end of the bridge for an overall length of 305'.

Each truss has eighteen panels, spaced 7'-3" on center, and is framed as a multiple kingpost. The upper chord is composed of paired 9"x9" timbers bolted together. The lower chord is paired 7"x11" timbers blocked and bolted together. The chords are connected by 9"x12" vertical posts (the center post is 9"x14") notched into and bolted at the upper and lower chords. The diagonals are 4"x12" timbers notched into the posts approximately 1' below the upper chord and 1' above the lower chord. There are plank braces placed diagonally across the three end panels. A pair of segmented timber arches flanks each truss. The arches spring from the abutments about 5' below the deck, rise to a height of about 9' above the deck, and span a distance of about 124'. Each arch is composed of 6"x12" paired timbers which are notched around and bolted at the posts of the trusses. There is a tension rod at each mid-panel point along the arch. Each rod passes between the pairs of arches and lower chord timbers and is secured on top of the arch with a 4"x8" wood block and nut and underneath the lower chord with a metal plate and nuts.

The lower chords of the bridge are seated on bed timbers (approximately 9"x9" or 10"x10") on top of the pier and abutments. Transverse floor beams measuring 9"x11" are seated on the lower chord approximately every 4'. Lower lateral bracing is 5"x5" crossing diagonally between the lower chords at every other panel point. There are nine lines of stringers (3"x5" or 4"x6" laid longitudinally on top of the floor beams. The deck is 2"x4" boards laid transversely and narrow-side up on top of the stringers. There are timber curbs along the length of the deck.

The roof system consists of 8"x8" tie beams seated on the upper chord at each panel point. Lateral bracing consists of 4"x4"s crossing diagonally between the tie beams. The rafters (approximately 2"x6") rest on the upper chord and are spaced approximately 2'-6" apart. Corrugated metal panels fastened to longitudinal wooden purlins on top of the rafters cover the gable roof.

Board and batten siding (variable width boards averaging 1"x8 1/2") covers the exterior of the bridges to 3' below the eaves. The shingles are fastened to 2 1/2"x5" longitudinal nailers on the outer faces of the trusses. The portals have straight, squared openings with clipped corners. The bridge has a heavily mortared stone pier and abutments. There are stone wingwalls along the long, inclined approaches and a corrugated steel arch culvert spanning an old millrace under the west approach.

Pennsylvania is the birthplace of the American covered bridge. In 1805 Timothy Palmer, a master carpenter from Massachusetts, built the 500' Permanent Bridge over the Schuylkill River at Philadelphia.[1] Shortly after its erection, at the urging of the bridge company, Palmer weatherboarded and roofed the structure to protect the trusses from the weather, making the Permanent Bridge the first covered bridge in the United States.[2] By 1810, covering timber bridges was conventional practice in America.[3]

Pennsylvania was also the proving ground for many early timber truss designs, among them several bridges of unprecedented size such as Lewis Wernwag's 340' Colossus (1812) and Theodore Burr's 360' McCall's Ferry Bridge (1815). These early bridges served as prototypes for thousands of covered bridges that were built across the United States in the nineteenth century.

During the height of the covered bridge period (ca.1830-1880), Pennsylvania had an estimated 1,500 covered bridges.[4] In the twentieth century, the majority of these were lost to decay, flood, arson and progress. Today with 209 examples, Pennsylvania holds the distinction of having the most covered bridges of any state in the United States.[5]

History of Bridge and Site

In the 1770s, Thomas Beale built a grist mill near this site on Tuscarora Creek. Several decades later, Beale sold the property to James Patterson, who operated the mill until his death in 1836. Joseph Pomeroy, who operated the mill into the late nineteenth century, subsequently purchased the property.[6]

The date of the first bridge at this location is not known. Michael Monahan's 1816 "Map of Mifflin County" shows Patterson's Mill at or near this site, but there is no indication of a bridge here.[7] The crossing first appears on Hopkins's 1863 "Map of the Counties of Perry, Juniata and Mifflin, Pennsylvania," but no records have been found to date concerning that bridge.

In the spring of 1901, severe floods and ice damaged the Pomeroy Mill and dam and the existing bridge at that site.[8] On March 18, the Juniata County Commissioners declared the bridge unsafe

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[1] The Permanent Bridge lasted in its covered state until 1850 when Daniel Stone's Market Street Bridge replaced it.
[2] Although covered bridges were built at least as early as the fourteenth century in Europe, they were not commonly built until after Palmer used the idea in the United States.
[3] Henry Grattan Tyrrell, *History of Bridge Engineering* (Chicago: H.G. Tyrrell, 1911), p. 121.
[4] Richard Sanders Allen, *Covered Bridges of the Middle Atlantic States* (Brattleboro: Stephen Greene Press, 1959), p.51.
[5] National Society for the Preservation of Covered Bridges, *World Guide to Covered Bridges* database printout, 2001.
[6] *History of that Part of the Susquehanna and Juniata Valleys Embraced in the Counties of Mifflin, Juniata, Perry, Union and Snyder in the Commonwealth of Pennsylvania*, Volume I (Philadelphia: Everts, Peck & Richards, 1886), p.783.
[7] Juniata was part of Mifflin County until 1831.
[8] *Juniata Tribune*, April 11, 1901, p.4.

and closed it to public travel.[9] Several attempts were made to repair the structure, but by December, according to the local newspaper, the bridge was out of repair and "cannot be used."[10] After hearing a petition from local residents, the Juniata County Court ordered that a two-span bridge be built below the Pomeroy Dam.[11] On February 12, 1902, the Juniata County Board of Commissioners approved G.F. Goodman's plans for a covered wooden bridge, and awarded the construction contract to James N. Groninger for $6,484.[12]

In June 1902, the local newspaper reported that George Lauver was hauling stone to the bridge site.[13] Newspaper accounts suggest that construction progressed through the summer and fall of 1902, and residents forded the river during that time. The last mention of construction appeared in the newspaper on November 13, 1902: "The bridge is almost completed but not any too soon as the water is too cold for horses."[14] The Juniata County Commissioners accepted the Academia Bridge in June 1903. The Pennsylvania State Highway Department's 1912 "Map of the Public Roads in Juniata County, Pennsylvania" clearly shows the alignment of the new bridge south of the former location.

The Academia Bridge served the county well for the first half of the twentieth century. No records were located concerning repairs to the structure, but presumably it underwent the usual repairs and maintenance.[15] After the state bypassed the covered bridge in 1950, the Juniata County Historical Society became involved in its preservation. They obtained ownership of the bridge in 1960, and made numerous repairs to the structure in 1961. The society is currently planning a major rehabilitation of the structure.[16]

James N. Groninger

Juniata County native James N. Groninger (1852-1931) was a millwright and bridge builder. According to his obituary, "a great number" of the county's covered bridges were constructed under his supervision.[17] Genealogical records of the Juniata County Historical Society indicate that James's older brother, William H. Groninger, was a surveyor for the county in the 1880s and that he prepared drawings for all new county bridges, "including ten lost in the Johnstown flood 1889."[18]

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[9] *Juniata County Commissioners Minutes*, March 18, 1901, p.173.
[10] *Juniata Tribune*, December 5, 1901, p.4.
[11] *Juniata County Road Docket*, 1900-1940, p.7.
[12] *Juniata County Commissioners Minutes*, February 12, 1902, p.216; *Juniata County Board of Commissioners Minutes*, March 29, 1902, p.221-24.
[13] *Juniata Tribune*, June 5, 1902, p.4.
[14] *Juniata Tribune*, November 13, 1902, p.1.
[15] Maintenance records were not found in the course of research for this report.
[16] Telephone conversation with Audrey Sizelove, Juniata County Historical Society, February 4, 2004.
[17] "James N. Groninger," obituary, *Juniata Tribune* January 8, 1931.
[18] Juniata County Historical Society genealogical records.

Theodore Burr and the Burr Truss

Theodore Burr (1771–1822) is a significant figure in the history of covered bridge building. He built his first bridge in 1801 near his sawmill in Chenango County, New York, and subsequently experimented with a wide variety of timber arch designs for bridges that spanned the Hudson, Mohawk, Delaware and Susquehanna rivers. His masterpiece was the short-lived, 360' McCall's Ferry Bridge (built 1815; destroyed by ice 1818), the longest timber bridge span ever built. Burr's greatest contribution to bridge building, however, was his design for an arch-reinforced truss with a level deck that he patented in 1806 and 1817.

The Burr truss was popular in the mid-nineteenth century for long-span railroad and roadway bridges and thousands of such bridges once existed. Unfortunately, Burr was not a shrewd businessman, and he suffered financial setbacks by accepting company stock in payment and then not being able to pay back his creditors. He died suddenly and mysteriously while supervising construction of a bridge at Middletown, Pennsylvania, and is reportedly buried in an unmarked grave somewhere in central Pennsylvania.

Sources

Allen, Richard Sanders. *Covered Bridges of the Middle Atlantic States*. Brattleboro, Vermont: Stephen Greene Press, 1959.

American Society of Civil Engineers. *American Wooden Bridges*. New York: American Society of Civil Engineers, 1976.

Beach, Nichols. Atlas of Perry, Juniata and Mifflin Counties, Pennsylvania. Philadelphia: Pomeroy, Whitman & Co., 1877.

Biographical Encyclopedia of the Juniata Valley. Chambersburg, Pennsylvania: J.M. Runk & Company, 1897.

Burr, Theodore. United States Letters Patent #X2679, April 3, 1917.

Flickinger, Robert Elliot. *The Flickinger Family History*. Des Moines: Success Composition and Printing Co., 1927.

History of that Part of the Susquehanna and Juniata Valleys Embraced in the Counties of Mifflin, Juniata, Perry, Union and Snyder in the Commonwealth of Pennsylvania, Volume I. Philadelphia: Everts, Peck & Richards, 1886.

Hopkins, G.M. "Map of the counties of Perry, Juniata and Mifflin, Pennsylvania." Philadelphia: Smith, Gallup & Hewitt, 1863.

Illustrated Atlas of Juniata County, Pennsylvania. Philadelphia: Wall, Mann & Hall, 1877.

Juniata County Commissioners Minutes, 1901.

Juniata Tribune, Juniata, Pennsylvania, 1900-03.

Juniata Herald, Juniata, Pennsylvania, 1902-03.

Monahan, Michael M. "Map of Mifflin County, 1816."

Nichols, Beach. *Atlas of Perry, Juniata and Mifflin Counties, Pennsylvania*. Philadelphia: Pomeroy, Whitman & Co., 1877.

Pennsylvania State Highway Department. "Map of the Public Roads in Juniata County, Pennsylvania," March 1, 1912.

Zacher, Susan M. and Tobi Casner. National Register of Historic Places Inventory-Nomination Form, "Covered Bridges of Juniata and Snyder Counties," n.d.